Would it be unreasonable to suppose that in the early experimental stages of the art of embalming—corresponding to the epoch with which Prof. Petrie is dealing—similar failures may have occurred, and that such a condition, for example, as Prof. Petrie has described from Deshasheh, where the fibula was upside down (see "Deshasheh," 1898, Pl. xxxvii.), would receive a natural explanation? Such cases are so exceedingly rare that it is idle to quote them as representing the "custom" of the country.

Apart from these rare exceptional cases of secondary burial and embalmers' "faking," all the disturbances of the bones of unplundered graves result from (1) the operation of the force of gravity on bodies falling into decomposition, and (2) the occasional action of rodents moving small bones. That this is so has been conclusively demonstrated by Dr. Reisner in the minute and critical examination of many thousands of burials in Egypt and Nubia. Thus there are very precise and definite reasons for discarding Prof. Petrie's fantastic speculations, and for accepting in their stead the simple and perfectly obvious explanation of the disturbed state of the skeleton in many graves, which he who runs may read.

The phrase "the bones even being broken to extract the marrow" (*op. cit.*, Nature, p. 401) calls for some further comment. Does it mean that Prof. Petrie is reaffirming his former statement of a belief in the practice of cannibalism (already quoted)? Can he point to one single case where the bones of a prehistoric Egyptian have been broken *post-mortem*, except by grave-plunderers, excavators, or the natural forces of the denudation of the soil and the disintegration of organic matter?

In "Naqada and Ballas," p. 32, Prof. Petrie referred to the forcible scooping out of the marrow as an evidence of cannibalism; but that statement was clearly inspired by his lack of familiarity with the normal medullary cavity of a human long bone and its relation to the cancellous tissue at the ends. But he added, further, that "there were grooves left by gnawing on the bones"—a sure sign of anthropophagy! Dr. Fouquet, who examined M. de Morgan's material of a similar nature, also saw these grooves, but called them "syphilitic ulcers."

Two years ago (*Lancet*, August 22, 1908, p. 521) I was able to demonstrate that the bones of many pre-dynastic Egyptians were certainly gnawed, but neither by man nor the spirochæte: the damage was inflicted by small necrophilous beetles. Although Prof. Petrie no longer refers to these signs of gnawing, he still speaks of the prehistoric Egyptian breaking human bones "to extract the marrow," *i.e.* presumably to eat it. The whole evidence afforded by excavations in Egypt goes to prove that this statement is pure fiction.

G. Elliot Smith.

The University of Manchester, October 1.

British Marine Zoology.

"The proof of the pudding is in the eating," and surely Prof. MacBride will admit that whether a biological station is or is not suitable for research must be decided, not by the expensiveness of the equipment, but by observing whether research is being carried on there.

That one station is ten times as large and expensive as another is no advantage and no credit to it unless it is also ten times as efficient. That it is only in such an establishment that Prof. MacBride can "bring research to a successful issue" is, of course, an important personal record, but it might be unsafe to generalise from one such observation.

I am sorry not to be able to agree with Prof. MacBride in the distinctions he draws between the stations equipped for research and others; and I cannot avoid a doubt as to whether he has personal knowledge of the smaller stations of this country. W. A. Herdman.

October 1.

I shall gratify Prof. Herdman's curiosity so far as to say that I have worked at more than one small station in this country.

I fully agree that "the proof of the pudding is in the eating," and I am content to leave it to the judgment of my fellow-zoologists whether in reviewing the work done at the various zoological stations in this country Plymouth has not justified its superior equipment by the superiority of the original work, both as to quantity and quality, which has been accomplished there.

E. W. MacBride.

Hormones in Relation to Inheritance.

With reference to my presidential address to Section D of the British Association, of which a full report appeared in Nature of September 22, I must rectify an omission by pointing out that the theory of the possible influence of hormones in inheritance was first enunciated by Mr. J. T. Cunningham in a paper in the *Archiv für Entwicklungsmechanik*, vol. xxvi., 1908, entitled "The Heredity of Secondary Sexual Characters in Relation to Hormones, a Theory of the Heredity of Somatogenic Characters." It was through inadvertence that the reference to Mr. Cunningham's paper was not printed in the copies of the address distributed at the meeting at Sheffield.

Gilbert C. Bourne.

Savile House, Oxford, October 4.

Pwdre Ser.

My friend Mr. Frank Darwin has sent me the following additional information respecting the *Pwdre Ser.*

"The 'Treasury of Botany' says that Nostoc is called 'Falling Stars,' and quotes Dryden (no reference)—

> 'And lest our leap from the sky prove too far,
> We slide on the back of a new falling star,
> And drop from above
> In a jelly of love.'

"The note is signed M. J. B. = Berkeley, so it may be trusted so far as that it really refers to Nostoc."

T. McKenny Hughes.

Ravensworth, Brooklands Avenue, Cambridge,
September 30.

Unemployed Laboratory Assistants.

A number of lads who have been employed as laboratory monitors in secondary schools, and whom the London County Council are unable to retain in their service beyond the age of sixteen years, have been referred to us by the London County Council with the view of our placing them. Some of them we have already been able to place in suitable employment, but there are still one or two on our books for whom we seek situations.

They all have an elementary knowledge of physics and chemistry. Some have learned glass-blowing and bending, and a few of the applicants have already passed the Board of Education examination in Chemistry (Stage I.). If any readers of Nature would like to have further particulars of these boys, I should be glad to supply them with information. Godfrey E. Reiss (*Hon. Sec.*).

Apprenticeship and Skilled Employment Association,
36 Denison House, 296 Vauxhall Bridge Road,
London, S.W., October 5.

THE INTERNATIONAL UNION FOR COOPERATION IN SOLAR RESEARCH.

This union held a very successful meeting—the fourth since its foundation—on Mount Wilson Observatory, California, during the last week of September, when there was an assembly of nearly forty European astronomers and physicists, who had crossed the Atlantic for the meeting, and many more American men of science. England was represented, among others, by Sir Joseph Larmor, Profs. Newall, Turner, Fowler, and Mr. Dyson. The gathering, representative as it was of all nations actively engaged in solar work, would have been even more so if a number of those who had signified their intention of being present had not at the last moment been pre-

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vented by illness or other causes from attending. Among them were Sir David Gill, Dr. Lockyer, Profs. Righi and Violle. To the great regret of everyone present, Prof. Hale was prevented by bad health, brought on through overwork, from taking part in the discussions. Together with Mrs. Hale, he received his guests at a garden-party at their home in Pasadena, and was able to come up to the observatory on the first day of the meeting, but on the advice of his doctor he returned to Pasadena, after delivering a short address on the general work of the conference.

As regards the results of the meeting, the first place must be given to the extremely satisfactory report of the committee on the determination of standard wave-lengths. The requirements of modern spectroscopic research having rendered all previous measurements obsolete, even for purposes which only require relative values, the Solar Union set itself the task of preparing new tables. The direct comparison between the wave-lengths of the red cadmium line with the standard metre carried out by Fabry and Pérot gave a result practically identical with that of Michelson, so that already three years ago its numerical value could be definitely adopted. Taking this line to be the primary standard, a sufficient number of iron lines had next to be compared with it, so that they might serve in subsequent work as secondary standards, with an accuracy hardly, if at all, inferior to that of the primary. This work was undertaken independently in three different laboratories by Fabry and Buisson, at Marseilles, by Eversheim under Kayser at Bonn, and by Pfungst under Ames at Baltimore. The numbers obtained agree so well that we are now already in possession of a large number of lines with accurately known wave-lengths. How accurately? Using the Angström (10^{-8} cms.) as unit, the average differences of the three independent determinations only amount to about three or four in the third decimal place, which means less than one part in a million. The few cases where the differences are somewhat greater are easily explained by a deficiency in the homogeneity of the lines, except in a small region in the orange.

The secondary standards are now sufficiently close together to serve as fixed points for interpolations, when gratings are used, and it is intended to proceed immediately with the further determination of tertiary standards so near to each other, that even with a prismatic dispersion every observer will have at his command a system of lines on which he can depend entirely for comparison or interpolation. In the orange region referred to, some barium lines will have to be added, and the total length of spectrum dealt with, which extends from λ 4282 to λ 6494, will before long be substantially increased on the red side In order to avoid confusion between the new and old determinations, the now adopted unit will be known as the "international Angström" (I.A.). If the Solar Union had done nothing else than this work on wave-lengths, it would have justified its existence.

We next note the report of the committee on the investigation of sun-spot spectra, which was presented by Prof. Fowler. Its work is sufficiently indicated by the following recommendations, which were adopted by the meeting:—

(1) That, notwithstanding the progress of photographic work, visual observations of spot spectra should be continued, and that the committee should be re-appointed to continue the organisation of this work.

(2) That in view of our increased knowledge of spot spectra, the committee should be authorised to prepare and circulate a revised and extended scheme of visual observations.

(3) That it is desirable that, for the use of visual observers, the separate sections of the new photographic map of the sun-spot spectrum should not exceed 60 centimetres in length, and should be on a scale of 5 mm. to the Angström.

Another committee dealt with spectroheliograph work, and here also we may confine ourselves to quoting the more important resolutions:—

(1) That daily photographs of the calcium flocculi be continued by the co-operating observatories.

(2) That provision be made, if possible, for the measurement of the photographs.

(3) That the desirability of utilising large spectroheliographs of high dispersion for the study of the upper layers of the solar atmosphere is recognised by the committee.

A report on the spectroheliograph work carried on at South Kensington was sent in by Sir Norman Lockyer, and will be printed in the transactions of the union, as also a discussion of solar phenomena as revealed by the spectroheliograph, which was presented by M. Deslandres.

An important, but from the nature of things somewhat slowly progressing, committee deals with the study of solar radiation. Its work has been seriously retarded by the lamented death of Knut Ångström, whose pyrheliometer had been adopted by the union as standard instrument, and who had undertaken personally to standardise all pyrheliometers sent out from Upsala. Latterly serious defects in the constancy of the indications of the instrument have shown themselves, and unless a ready means is found to keep an accurate log of their changes by frequent comparison with some standard radiator, the union will be forced to modify its previous decision. Mr. Abbott presented the report of the committee, and gave an account of his own important work on solar radiations, which has revealed some fluctuations in the amount of heat and light which enters our atmosphere. These fluctuations, which frequently amount to 5 or 6 per cent., may still be due to uncorrected influences of atmospheric absorption, and Mr. Abbott laid stress on the importance of establishing an independent station in a locality where the atmospheric conditions are favourable, so that simultaneous observations can be carried out, at least in two places, and atmospheric inequalities still further eliminated.

It remains to record an important alteration in the constitution of the union, which has decided to extend its scope, and include astrophysics in the range of its activity. In voting for the change, the members of the union were fully aware of the importance of their decision. It was pointed out by several speakers that the union exposed itself to the danger of undertaking more than could be managed, and that before long the primary object of the union might be swamped by the additional problems now introduced. But, on the other hand, everybody recognised that the distinction between the sun and a star was an artificial and accidental one, and that the study of one was a necessary complement to the study of the other. The danger of being overwhelmed by the additional subjects is not great, because only a few well-defined portions of astrophysics are adapted for investigation by international cooperation. At the conclusion of an interesting discussion, the vote went unanimously in favour of the change. A beginning of the new order of things was made at once, and a committee was appointed, with Prof. E. Pickering as chairman, to discuss the possibility of coming to an agreement on the classification of stellar spectra.

The next meeting of the union will be held at Bonn in the year 1913.

ARTHUR SCHUSTER.

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